



**TRR 181 Cruise  
Poseidon 523  
2 – 23 May 2018**



**3. Weekly report (21 May 2018)**



After the successful recovery of the mooring last week we took a few days to prepare the instruments for the second deployment period. The setup of the mooring is very similar to the first period, with an additional high-frequency acoustic current meter in the upper part of the mooring. The top of the mooring is formed by the head buoy with an upward looking current profiler, designed to monitor the currents and shear in the upper 200m of the water. Below that, in addition to the new current meter, there are seven current meter/temperature logger pairs that will resolve the low mode profiles of currents and stratification, and thus monitor the temporal variability caused by the low-mode internal waves. The re-deployment of the mooring took place on Friday, May 18, at 30°29.33'N, 030°11.90'W, and went smoothly.

Turbulence measurements in the form of microstructure profiles in the upper ocean have been taken throughout the cruise during the time series stations with a vertical microstructure profiler (VMP). The VMP on the POS523 cruise is (among other sensors) fitted with two shear probes used to characterize the dissipation of kinetic energy in micro-scale turbulence. VMP deployments occurred in 2h segments between sets of CTD rosette deployments. The VMP is lowered over the stern of the ship, where it then falls freely to its maximum depth, typically around 500-700m. The instrument is recovered using a small electrical winch and then directly re-deployed. As the VMP is designed for continuous autonomous operation, it is not necessary to bring the VMP back on deck between deployments; separate profiles can be extracted in post-processing. Each 2 hour time block is sufficient time to complete 4 or 5 profiles, each profile taking about 20-30 minutes. The deployments are done by a three person team - one person is in charge of operating the winch, helped by the second person, who leads the tether from the spool and passes it to the third person. The third team member's task consists of ensuring that enough line is in the water at any given time, as the VMP must be deployed on a slack line.

In addition to the main focus of the cruise, the TRR 181, we have a team member from the University of the Azores Horta, Clara Loureiro, who studies the microbial communities through ocean space and time scale in the Azores region. The focus of her work is on bacterioplankton (bacteria and archaea), which represents one of the most important marine organisms for having a crucial role on the global element cycles regulation as to their unique capacity to decompose and remineralise dissolved organic matter. Bacterioplankton distribution and patterns can be shaped by coupled physical/biological mechanisms (such as nutrient availability, mesoscale features, etc...) and to understand such dynamic spatial-temporal surveys are needed. The results from Pos523 will be connected to the physical ocean interactions in this region and enlighten our knowledge about who is there, what is their function and how the environment is interacting with them.

We finished work in the night from Sunday to Monday, having completed 64 CTD/LADCP profiles on 5 stations (with a total length of 547km!), as well as 17 microstructure

deployments. Now we are all busy packing up and looking forward to arrive in Ponta Delgada.

Best wishes to all friends, families and colleagues on shore,  
Maren Walter and the scientific party of POS523



Deployment of free-falling microstructure profiler with a tethered rope for recovery.



Equipment for on-board filtration of bacterioplankton.